AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

Claim 1 (Currently Amended): ~~Method~~ A method for an automatic determination of a physical, technical method and/or colloidal chemistry ~~parameters~~ parameter using a measurement device, by a determination of an attenuation of radiated waves during a segregation of a monodisperse or polydisperse dispersion sample ~~samples subjected to gravitation or centrifugation~~, comprising:

(a) during the segregation ~~by centrifugation or gravitation~~, repeatedly determining and recording momentary transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$ characterizing a current segregation status of the sample using waves radiated with intensity values $I_o(t, r)$ ~~and/or instantaneous scattering values $I_S(t, r)$~~ as a function of a position r within the sample ~~samples~~ at a time t, for one or more wavelengths over ~~the entire length of each sample or in selected~~ at least a partial section ~~sections~~ of ~~each~~ the sample, simultaneously for multiple positions r ~~samples~~;

(b) calculating **[[an]]** extinction profiles $E_T(t, r)$ by finding a log of a ratio of $I_o(t, r) / I_T(t, r)$ for a determination of a particle or droplet concentration for the dispersion sample ~~samples~~ as a function of the sample position and time;

(c) from the extinction profiles $E_T(t, r)$ determined at different times and a local adjustment made in time segments, calculating segregation speeds for any constant extinction values; and

(d) from a ratio of the segregation speeds determined for specific extinction percentiles, calculating a polydispersity index~~, which is characteristic for the polydispersity of the density or a particle or droplet size~~.

Claim 2 (Currently Amended): ~~Method~~ The method according to claim 1, wherein ~~the~~ particle or droplet sizes and ~~their~~ a particle or droplet size distribution are determined.

Claim 3 (Currently Amended): ~~Method~~ The method according to claim **[[**1**]]** 2, comprising determining the extinction profiles as a function at a freely selectable position or over a range of the sample, and the particle or droplet size distribution ~~of particle or droplet sizes~~ is calculated from the extinction profiles.

Claim 4 (Currently Amended): ~~Method~~ The method according to claim **[[**1**]]** 25, comprising calculating ~~the~~ an apparent relative viscosity as a function of ~~the~~ concentration by volume from the hindrance function, taking into account the concentration by volume.

Claim 5 (Currently Amended): ~~Method~~ The method according to claim 1, comprising determining ~~the~~ a sedimentation type and ~~the~~ a critical concentration by volume ~~for the use of consolidation phenomena~~ from the change in the segregation speed during the segregation.

Claim 6 (Currently Amended): ~~Method~~ The method according to claim 1, comprising increasing the ascertainable range of ~~the~~ a particle or droplet size distribution as well as ~~the~~ a resolution with respect to the distribution ~~of particle or droplet sizes~~ by varying ~~the number of revolutions and~~ the measurement time intervals, and varying the number of revolutions per minute of a centrifuge when segregation is conducted by centrifugation.

Claim 7 (Currently Amended): ~~Method~~ The method according to claim 1 wherein ~~the~~ a mass density distribution of the sample is calculated from the extinction profiles $E_T(t, r)$ for a known distribution of particle sizes.

Claim 8 (Currently Amended): ~~Method~~ The method according to claim 1 wherein for mixtures of substances of different densities, ~~the~~ a distribution of particle or droplet sizes for the individual substance components is calculated from the extinction profiles ~~for the segregation of dispersions with different densities for the dispersion medium~~.

Claim 9 (Currently Amended): ~~Method~~ The method according to claim 1, wherein segregation is conducted by centrifugation, and the method comprises ~~comprising~~ computing indices for ~~the~~ a consolidation behavior of the sample, ~~dispersion samples from the sediment levels for~~ by gradually ~~changed~~ changing the number of revolutions per minute of the centrifuge during centrifugation ~~related to the respective operative centrifugal force~~.

Claim 10 (Currently Amended): ~~Method~~ The method according to claim 1 wherein the control of ~~the~~ a segregation analyzer and ~~the~~ a measurement sensor, including a radiation source, sample management and data transfer, data handling and data storage, and ~~as well as all~~ steps of analysis and ~~the~~ documentation of the results, takes place by software supported by a database.

Claim 11 (Currently Amended): ~~Device~~ A device for an automatic determination of a physical, technical method and/or colloidal chemistry ~~parameters,~~ parameter, the device comprising:

a ~~PC-controlled multi-~~ sample receptacle unit, and ~~arranged vertically or horizontally with~~ a spectrometric measurement device with a source producing monochromatic parallel radiation, which measures ~~registers, digitizes and stores the~~ radiation intensity scattered or transmitted by ~~the respective~~ a dispersion sample over ~~the~~ a partial or entire length of the sample, simultaneously for multiple positions of the sample ~~or shifted temporally during segregation, resolved for location and time~~.

Claim 12 (Currently Amended): ~~Device~~ The device according to claim 11, wherein different cuvettes matched to the measurement task and/or the dispersion sample with respect to the optical path length and the materials can be used, the cuvette type is detected automatically, and the parameters required for the analysis of the measurement results are automatically made available via database entries for ~~the~~ a calculation of the parameter ~~parameters~~ to be analyzed.

Claim 13 (Currently Amended): ~~Device~~ The device according to claim 11 wherein radiation sources of different monochromatic wavelengths, whose radiation intensity $I_o(t, r)$ can be varied, are ~~also~~ used ~~electively in an alternating fashion,~~ depending on the sample and measurement tasks.

Claim 14 (Currently Amended): ~~Device~~ The device according to claim 11 wherein a measurement range can be controlled by a thermostat and measurements can be carried out at selectable temperatures both under as well as over room temperature.

Claim 15 (Currently Amended): ~~Device~~ The device according to claim 11 wherein the sample receptacle unit is a multi-sample receptacle unit **[[**is**]]** designed as a rotor, and is driven by a motor with programmable variable and/or constant revolutions.

Claim 16 (Currently Amended): ~~Device~~ The device according to claim **[[**11**]]** 15, wherein the multi-sample receptacle unit is capable of accepting samples placed vertically for segregation in the gravitational field.

Claim 17 (Currently Amended): ~~Method~~ The method according to claim 1, wherein the physical, technical method and/or colloidal chemistry parameter that is determined is selected from the group consisting of particle size, distribution of particle size, speed distribution, particle flux, hindrance function, index of structural stability and a combination thereof.

Claim 18 (Canceled)

Claim 19 (Currently Amended): ~~Method~~ The method according to claim **[[18]]** 29, ~~wherein momentary transmission values $I_T(t, r)$ characterizing a current segregation status of the waves radiated with intensity values $I_o(t, r)$ are repeatedly determined and recorded, further comprising~~ wherein the characterizing step comprises calculating an extinction profile $E_T(t, r)$ by finding a log of a ratio of $I_o(t, r) / I_T(t, r)$ for a determination of a particle or droplet concentration for the sample ~~dispersion samples~~ as a function of the sample position and time.

Claim 20 (Currently Amended): ~~Method~~ The method according to claim **[[18]]** 19, ~~further~~ comprising calculating ~~, from the~~ multiple extinction profiles $E_T(t, r)$ determined at different times ~~and a local adjustment made in time segments~~, and from the extinction profiles $E_T(t, r)$, calculating segregation speeds ~~for any constant extinction values~~.

Claim 21 (Currently Amended): ~~Method~~ The method according to claim 1, further comprising:

(e) calculating extinction-weighted distributions of the particle or droplet size from extinction profiles $E_T(t, r)$ for selectable times, in relation to an initial extinction profile of the sample ~~while standardizing on the maximum extinction for this profile~~.

Claim 22 (Currently Amended): ~~Method~~ The method according to claim 1, further comprising:

(f) calculating ~~the~~ cumulative volume-weighted distributions of the particle or droplet size from any extinction profiles acquired at time t according to (b), wherein

(1) ~~the~~ a volume-specific extinction cross section that is dependent on particle size is calculated according to Mie-theory while including the device constants from known optical parameters of the sample ~~samples~~, or

(2) ~~the~~ a volume-specific extinction cross section that is dependent on particle size is determined if the extinction of at least two monodisperse reference samples is determined ~~corresponding to (b)~~, or

(3) ~~the~~ a volume-specific extinction cross section that is dependent on particle size is determined if the course of the extinction is determined during the segregation of at least one polydisperse substance system with similar optical characteristics ~~corresponding to (b)~~.

Claim 23 (Currently Amended): ~~Method~~ The method according to claim 22, further comprising:

(g) using the volume-weighted distribution of particle or droplet sizes determined in (f) and ~~the~~ a particle size dependency for the volume-specific extinction cross section determined in steps (f)(1), (f)(2) or (f)(3), assigning each radial position and the particle size associated with it a volume concentration.

Claim 24 (Currently Amended): ~~Method~~ The method according to claim 1, further comprising:

(h) determining ~~the~~ a flux density function standardized to ~~the~~ a centrifugation constant from ~~the~~ a change in the concentration of the sample ~~samples~~ with a known starting concentration.

Claim 25 (Currently Amended): ~~Method~~ The method according to claim 1, further comprising:

(i) determining ~~the~~ a concentration-dependent hindrance function for the sample ~~substance system~~.

Claim 26 (Currently Amended): ~~Method~~ The method according to claim 1, further comprising:

(j) determining ~~the~~ a volume-weighted distribution of the Stokes equivalent diameter for the case **[[of]]** when a hindrance function **[[s]]** is not equal to 1 until the difference between the concentration profiles of consecutive steps are less than a value to be provided in advance, or if the allowance for ~~the~~ a hydrodynamic impediment is provided by a mathematical algorithm.

Claim 27 (Canceled)

Claim 28 (New): The method according to claim 1, wherein the polydispersity index calculated in step (d) is characteristic for the polydispersity of the density or a particle or droplet size.

Claim 29 (New): A method for determining a parameter of a sample using a measurement device, the method comprising:

radiating the sample with waves having intensity values $I_o(t, r)$, at multiple positions r of the sample at a time t;

during segregation of the sample, detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$ of the sample, simultaneously for multiple positions r; and

characterizing a segregation status of the sample from the transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$.

Claim 30 (New): The method according to claim 29, further comprising recording the transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$.

Claim 31 (New): The method according to claim 29, wherein the radiating, detecting and characterizing steps are repeatedly conducted.

Claim 32 (New): The method according to claim 29, wherein the step of detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$, is conducted over substantially the entire length of the sample.

Claim 33 (New): The method according to claim 29, wherein the step of detecting transmission values $I_T(t, r)$ and/or scattering values $I_S(t, r)$, is conducted for multiple samples.

Claim 34 (New): The method according to claim 29, wherein the characterizing step comprises calculating an extinction profile $E_T(t, r)$ of the sample as a function of the sample position r and time t, by finding a log of a ratio of $I_o(t, r) / I_T(t, r)$.

Claim 35 (New): The method according to claim 20, further comprising calculating a polydispersity index from a ratio of the segregation speeds determined for specific extinction percentiles.